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UNIVERSITY COLLEGE OF WALES.

THE SCIENTIFIC SOCIETY.

First Report.

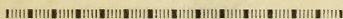
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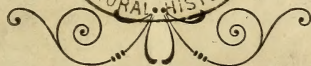


THE
SCIENTIFIC SOCIETY.



FIRST REPORT,

FOR SESSION 1892-93.



LIST OF OFFICERS,

SESSION 1892-93.

PRESIDENT :

PROF. AINSWORTH DAVIS.

VICE-PRESIDENTS :

DR. SNAPE,

PROF. LEWIS.

HON. SECS. :

H. M. ATKINSON,

HOWELL DAVIES.

COMMITTEE :

MISS CARPENTER,

MISS SPENCER,

MISS HUGHES,

MR. BOWER,

MR. SALTER, B.Sc.,

W. H. BARKER,

D. ELLIS,

E. J. RUSSELL,

S. T. PARKINSON.

REPORT FOR THE SESSION, 1892-93.

In venturing to print our first Report we are conscious that the Society has not yet crystallized into permanent form, that its methods, perhaps even its constitution, are tentative and subject to modification, and that in the opinion of some it may not so far have succeeded in justifying its existence.

In response to a generally expressed opinion that there was room for such a society, action was taken at the beginning of the session. A General Meeting of all members of the College interested in Science was held in the Examination Hall on the evening of Oct. 20th, Principal Roberts taking the chair. The function of such a society as a central point round which might gather the various floating interests in matters scientific which were known to exist, and the idea that its meetings might furnish a medium for the presentation of fact and theory in more attractive guise and for their treatment on freer lines than those necessarily adopted in the lecture-room, were dwelt upon. The meeting resolved upon the establishment of the Society, and upon its name. It was further decided that the work of the Society should group itself under two heads; the two branches to be known respectively as

THE NATURAL HISTORY SECTION,

THE CHEMICAL AND PHYSICAL SECTION.

A constitution was framed, and officers appointed as above. It was decided that it should be open to any member of the College to join the Society upon payment of a nominal fixed subscription.

The Society's MEETINGS, eight in number, have been held regularly at intervals of a fortnight during the Michaelmas and Lent Terms.

The Inaugural Meeting, on November 2nd, 1892, took the form of a *Conversazione*. The President and Vice-Presidents delivered addresses at the commencement of the evening. Dr. Snape's chemical experiments, Prof. Lewis's exhibit of vacuum tubes, and the aquaria of the Biological department stocked with living occupants, were items in a varied and popular bill-of-fare.

The second meeting took place on November 23rd, when Prof. Lewis lectured to the Society on "Intermittent Illumination." The subject was elucidated by several striking experiments.

On November 30th, Mr. Salter's paper introduced us to "The Marine Life of our Rock Pools." An interval allowed of our making the further acquaintance of such of them as were displayed under microscopes in the adjoining room.

As a variation on sectional evenings, the last meeting of the term, that of December 14th, was devoted to the reading of

short papers of a miscellaneous character. Mr. Bower dealt with recent advances in methods of measuring Gravitation; Miss Davies pointed out some of the geological features of our beach and cliffs; D. Ellis directed our attention to the micro-organisms upon which so much of the scientific attention of the day is focussed; and in conclusion the vexed question of "The Valency of Nitrogen" was discussed by W. H. Barker.

Our first gathering in Lent Term was upon Jan. 25th. Miss O'Brien showed how "Aquatic Plants" are refugees driven back, by severe competition for the possession of the land, into the water, the primary home of both animal and vegetable life; and further, how they have become structurally modified, and thus adapted to their new surroundings. S. T. Parkinson followed with some account of the Mosses and Hepatics so well represented in our district. Careful and artistic blackboard illustration was a feature of this meeting, as of several others.

An evening having been given to our Marine Fauna earlier in the session, the turn of "Our Ponds and Ditches" came upon Feb. 8th. Prof. Davis, in an Inaugural Paper, treated of fresh-water forms in general, while two short papers on special groups, viz., *Rotifera* and *Entomostraca*, were contributed by Miss Hughes and by Howell Davies respectively. The Clarach ditches furnished most of the illustrative material, which was displayed under the microscopes.

Biological themes having had so far rather a full share of attention, on Feb. 22nd the Society met in the Chemical Theatre to listen to Dr. Snape's lecture on "Alchemy." The quaint mysticism with which the mediæval alchemists—sometimes rapt enthusiasts, sometimes conscious impostors—invested their search for the "Philosopher's Stone" and the "Elixir of Life," were amusingly described, due credit being given to these pioneers of the retort and crucible for the real benefits which science gleaned from their labours.

A miscellaneous programme awaited those who attended the last meeting of the session upon March 14th. In the first instance, Dr. Brough led the way to entirely new regions by introducing the subject of "Sleep—Natural and Artificial." A rabbit, a fowl, and a cray fish were introduced to illustrate his remarks. P. J. Grubb, in a paper upon "Mars," gave us up-to-date information regarding that planet; while H. M. Atkinson's paper upon "Modern Explosives" was practically illustrated without undue casuality.

Besides the paper which has been the *pièce de resistance* of the evening, some other routine business has been gone through at each meeting. With a view to having brought under our notice any points of interest engaging the attention of the scientific world at large, recorders were appointed for Inorganic Chemistry, Organic Chemistry, Agriculture, Botany, Zoology, Physics,

and Geology respectively. They were asked to present short ABSTRACTS from time to time of important papers read and work done in these departments. E. J. Russell, the representative of Inorganic Chemistry, has shown commendable assiduity in so doing.

Members have been asked to lay upon the table for exhibition any OBJECTS OF SCIENTIFIC INTEREST which they may meet with from time to time. Prof. Davis has shown flint implements from the Neolithic workshop of Pressigny le Grand in Poitou, the gift of Sir John Evans; Mr. Salter, a "Water Stone" from South America, with fluid inclusion; and Howell Davies, a Badger, obtained by him near Carmarthen in January of the present year.

An invitation to members to send in written QUESTIONS upon scientific points as to which they desire information, has so far met with small response.

At the foundation of the Society, it was recognized that a useful function of the Natural History section would be to organize EXCURSIONS for working out the fauna and flora of the district. Eight of these excursions have been held. The attendance has usually been very fair, and has, on at least one occasion, reached sixty. The President has usually acted as conductor, but has once been relieved of this office by Dr. Ethè, and once by Dr. Snape. The excursions have as far as possible been planned with a view to visiting some spot of interest—archæological or geological; but two of them have been devoted to Natural History purposes in general. Members have been asked to bring the specimens found—minerals, flowering plants, mosses, &c.—to "receivers," who have identified and recorded them. Our Silurian shales and grits are, unfortunately, all but unfossiliferous; but Prof. Davis has pointed out the faulting, fracture, contortion, &c., which are shown in our cliffs and quarries with diagrammatic clearness. His demonstrations have been a valued feature of the excursions.

The Excursions which have taken place are as follows:—

Oct. 29, 1892.—Llanilar.

Nov. 12.—Cefn Hendre Quarry and Hên Gaer. The latter is one of the hill forts, of frequent occurrence in this district.

Dec. 3.—Tanybwelch (by permission of Vaughan Davies, Esq.), to visit the original site of Aberystwyth Castle.

Feb. 11, 1893.—Borth, for the "Causeway" (Sarn Cynfelin), and the "Submerged Forest."

Feb. 25.—Monk's Cave. Geological structure of the cliffs.

April 29.—Llanilar.

May 13.—Talybont. An excursion in brakes, for the purpose of visiting Bedd Taliesin, reputed grave of the "Chief of the Bards."

May 22.—Cader Idris. A geological and botanical excursion. The ascent of the mountain and the other items of the programme were carried out, with some variations, which probably no one will at this length of time regret.

The NUMBER OF MEMBERS of the Society is at present over one hundred.

CONTRIBUTIONS TO OUR FAUNA AND FLORA. ZOOLOGY.

MAMMALIA.

Seal (*Phoca vitulina*).—Haunts the rocks and caves about eight miles down the coast. A specimen was taken while asleep on the rocks below the College one morning in October, 1891.

Otter (*Lutra vulgaris*).—Occurs in the Teifi, and less commonly in the Rheidol.

Polecat (*Mustela putorius*).—By no means uncommon in this neighbourhood. A specimen was obtained six miles south of the town on Jan. 4th, 1893. Remains of three seen at Cwm Rhaiadr House, March 22nd.

Water Shrew (*Sorex fodiens*).—Once noted.

BIRDS.

One hundred and seventeen species have been noted. These may be classified as follows:—

A—Species which breed in the district:

Resident, 68	} 94.
Summer Migrants, 26	

B—Non-breeders:

Winter Migrants, 18	} 23.
Occasional, or on passage, 5	

Raven.—Two nesting-sites upon the coast have been tenanted as usual this season.

Chough.—Our local choughs are reduced to about two pairs.

Peregrine Falcon.—A nesting-site on the cliffs is occupied by a pair every spring.

Common Buzzard.—Only occasionally seen within a dozen miles of Aberystwyth, but breeds rather further away in the hills.

Kite.—Still exists in small and decreasing numbers at no great distance from us. Two pairs, with their nests, were seen, May 23rd, 1893.

Girl Bunting.—The recent extension of range which has brought this species into our district is of interest. It is still very scarce; a male singing at Bryn-y-môr, May 4th, 1893.

Snow Bunting.—Occurred during the snow-falls of Jan. 9th, 1892, Jan. 6th, 1893, and subsequent days. Two on Constitution Hill, March 12th, 1893.

Brambling.—A snow-time visitor, like the last. On Jan. 7th, this year, they were to be seen in every stack-yard.

Wood Lark.—Occurred with skylarks on migration, Jan. 10th, 1892, Jan. 7th, 1893.

Stock Dove.—Haunts the cliffs in small numbers.

Golden Plover.—Breeds upon the slopes of Plynlimmon.

Oystercatcher.—Has been found nesting at the mouth of the Dovey.

Dunlin.—A few nest upon a large peat-bog distant some twelve miles from the coast.

Lesser Black-backed Gull.—A breeding colony of perhaps fifty pairs at the inland locality just mentioned.

Shield-duck.—Nest and eggs found at Wallog, May 9th, 1893.

Manx Shearwater.—Several individuals hawking to and fro over the sea just off shore on night of May 15th, 1893.

Grey Phalarhope.—An immigration occurred after stormy weather, Oct. 15th—19th, 1891.

Many of the migratory birds arrived this year exceptionally early, as shown by the following dates :—

Wheatear, March 12.	Blackcap, April 19.
Chiff-chaff, March 21.	Corncrake, April 21.
Ring Ouzel, March 29.	Whinchat, April 22.
Redstart, March 29.	Common Sandpiper,
Swallow, April 4.	April 22.
Willow Wren, April 4.	Sedge Warbler, April 22.
Tree Pipit, April 5.	Sand Martin, April 23.
Grasshopper Warbler,	Ray's Wagtail, April 26.
April 18.	Garden Warbler, April 28.
Common Whitethroat,	Swift, May 2.
April 19.	House Martin, May 7.
Cuckoo, April 19.	Spotted Flycatcher, May 9.
Wood Wren, April 19.	Red-backed Shrike, May 28.

No work has yet been published dealing with the avi-fauna of this part of Wales. Mr. Salter, who is collecting material for a complete list, would be greatly obliged for notes on birds from any correspondents in the district, and more especially for records of the occurrence of rarities.

LEPIDOPTERA.

Twenty-five species of butterflies have been noted. The Comma (*Vanessa c-album*) has been met with at Arthog and at Llyfnant Valley. A specimen of the Clouded Yellow (*Colias edusa*) was seen at Clarach, June 7th, 1892. The Marsh Ringlet (*Cenonympha Darius*) has been found in some numbers at Cors Teifi. This is apparently a new locality for this North Country butterfly, and may extend its southern range.

MARINE FAUNA.

A beginning only has been made, but a considerable number of names has been added to the preliminary list published by Prof. Parker and Hans Gadow in the *College Magazine* for June, 1881. Our marine fauna is subject to these disadvantages, viz., the exposed nature of the coast, the lead poisoning of the rivers, and the absence of limestone. The rock-pools in front of the College have received most attention. We hope to attempt dredging before long: up to the present only shore-collecting has been tried.

Of **Nudibranchs**, *Doris tuberculata* and *Eolis papillosa* have been met with in fair numbers, while the following species have also occurred:—*Doris aspera*; *Doto coronata*, *Goniodoris nodosa*, *Flabellina drummondi*, *Ancula cristata*.

From their abundance and variety, there is every reason to believe that the **WORMS**, more especially the **Polychaetes** and **Nemertines**, would yield excellent results; but as we do not possess McIntosh's *Nemertines*, or any other of the monographs published by the Ray Society, we are quite unable to identify them. The loan of any such works would be much appreciated, or we would forward gatherings to any specialist willing to undertake the naming of the species. On Jan. 10th, 1893, the little red archi-annelid, *Dinophilus taniatus*, was found in great abundance.

Of **Turbellaria**, *Leptoplana tremellaris* occurred in plenty at the end of November last, seven specimens being taken under one stone. The Clarach ditches have yielded two fresh-water forms, *Polycelis nigra* and *Dendrocoelum lacteum*; and from the same locality, with other **Entomostraca**, *Lynceus sphaericus* has been obtained. So scarce are **ECHINODERMS**, even the common starfish, *Asterias rubens*, that we were surprised to find this species in large numbers washed up on the end of the Causeway at Wallog on Feb. 11th. The same day several examples of *Asteropecten* were obtained from Borth beach. We hope to give a much less meagre report under this heading on the next occasion.

BOTANY.

Little attention appears to have been paid, hitherto, to the flora of our district, but an attempt is now being made to form a complete list of the flowering plants which occur within a radius of twelve miles of Aberystwyth. The list now includes 340 species, and, as frequent additions are being made, it seems best on this occasion only to mention a few of the plants most worthy of note, in the hope that we may be able to publish a complete flora at no distant period. From a botanist's point of view, the district is not a rich one; many plants common in most parts of England are entirely wanting. The uniformity of the geological formation (and especially the absence of limestone) is largely

accountable for these lacunæ. Slow-flowing rivers—and lakes, with the exception of mountain-tarns—are also a desideratum. The entire absence of the American Pond-weed (*Elodea canadensis*) is interesting in this connection. The Cader Idris and Plynlimmon ranges (both, strictly speaking, beyond the limits of our district), have hitherto proved disappointing as a hunting ground for sub-alpine species. The cliffs, shingle, and sand-hills of the coast have, however, given better results, and the two large bogs—Cors Fochno, at Borth, and Cors Teifi, between Strata Florida and Tregaron—have yielded numerous marsh plants.

The following, which occur within the twelve-mile radius, are recorded from less than half of the provinces into which the editor of the *London Catalogue*, for botanical purposes, divides the British Islands. Bearing in mind that the total number of provinces is 112, the numbers attached to the names may be taken as an index of comparative rarity.

- Welsh Poppy, *Meconopsis cambrica*, 14. Devil's Bridge.
 Horned Poppy, *Glaucium luteum*, 50. Shore at Clarach, &c.
 Upright Vetch, *Vicia orobus*, 30. Edges of pastures.
 Wall Pennywort, *Cotyledon umbilicus*, 53. Walls and banks.
 English Stonecrop, *Sedum anglicum*, 55. Rocky hill-sides.
 Oblong Sundew, *Drosera longifolia*. Cors Fochno—with the
 Common Sundew, *D. rotundifolia*.
 Sea Holly, *Eryngium maritimum*, 50. Shore at Clarach.
 Sea Samphire, *Crithmum maritimum*, 25. Cliff near Borth.
 Marsh Andromeda, *Andromeda polifolia*, 29. Cors Fochno.
 Sea Convolvulus, *Calystegia soldanella*, 44. Shore at Clarach.
 Pointed Toadflax, *Linaria elatine*, 55. Occasional, as a cornfield
 weed.
 Pale Toadflax, *Linaria repens*, 21. Common in hedges.
 Sea Spurge, *Euphorbia paralias*, 29. Sand-hills north of Borth.
 Portland Spurge, *Euphorbia portlandica*, 19. Craig-y-Pistyll.
 Sea Stork's-bill, *Erodium maritimum*, 33. Shore at Clarach.
 Lesser Swine's-cress, *Senebiera didyma*, 40. Aberdovey.

The following are very local in their occurrence, or are otherwise of interest :—

- Globe Flower, *Trollius europæus*. Devil's Bridge, Crosswood.
 Columbine, *Aquilegia vulgaris*. Cwm Woods. Probably, like
Omphalodes verna, which grows near it, an escape, though
 both are well naturalized.
 Sea Rocket, *Cakile maritima*. Borth Warren.
 Yellow Pansy, *Viola lutea*. Almost the only flowering plant of
 the mountain sheep-walks.
 Bloody Crane's-bill, *Geranium sanguineum*. Aberdovey.
 Everlasting Pea, *Lathyrus sylvestris*. Bushy cliff-slopes.
 Meadow Saxifrage, *Saxifraga granulata*. Devil's Bridge.

Cranberry, *Vaccinium oxycoccos*. Cors Fochno.
 Yellow Archangel, *Lamium galeobdolon*. Llyfnant.
 Prickly Saltwort, *Salsola kali*. Shore at Clarach.
 Water Avens, *Geum rivale*. Pont Erwyd.
 Marsh Cinquefoil, *Potentilla comarum*. Llanbadarn Bog.
 Woodruff, *Asperula odorata*. Devil's Bridge.
 Mountain Cudweed, *Antennaria dioica*. Hill-side at Clarach.
 Hound's Tongue, *Cynoglossum officinale*. Borth Warren.
 Sweet-scented Orchis, *Gymnadenia conopsea*. Near Pont Erwyd.
 Twayblade, *Listera ovata*. Plantations at Wallog.
 White Helleborine, *Epipactis latifolia*. Cwm Woods.

Some of the more interesting plants which have been met with rather further afield are as follows:—

Wall Rocket, *Diplotaxis muralis*. Harlech Castle.
 Maiden Pink, *Dianthus deltoides*. Barmouth.
 Marsh St. John's Wort, *Hypericum elodes*. Near Dolgelley.
 Yellow Balsam, *Impatiens noli-me-tangere*. Woods at Arthog.
 Starry Saxifrage, *Saxifraga stellaris*. Cader Idris.
 Mossy Saxifrage, *Saxifraga hypnoides*. Cader Idris.
 Rose-root, *Sedum rhodiola*. Cader Idris.
 Water Lobelia, *Lobelia Dortmanni*. Teifi Lakes.
 Dyer's Greenweed, *Genista tinctoria*. Strata Florida.
 Common Skullcap, *Scutellaria galericulata*. Strata Florida.
 Yellow Water-lily, *Nuphar lutea*. Teifi Lakes, at an altitude of 1,600 feet.
 Small Butterfly Orchis, *Habenaria albida*. Strata Florida.

Owing to the exceptionally warm season, most plants have flowered from three weeks to a month before their normal time. A few dates may be given for comparison.

	1893.		1892.
Stitchwort ...	March 4	...	April 5
Hawthorn or May...	April 15	...	May 6
Horse Chestnut ...	April 21	...	May 19
Honeysuckle ...	May 5	...	June 12
Foxglove ...	May 7	...	June 4
Dog Rose ...	May 11	...	June 10

About twenty species of **Ferns** have been found. A few of the more noteworthy ones may be mentioned, with their localities.

Filmy Fern, *Hymenophyllum tunbridgense*. Cader Idris, Llyfnant Valley, Devil's Bridge.

Parsley Fern, *Cryptogramme crispa*. Cader Idris.

Sea Spleenwort, *Asplenium marinum*. Monk's Cave.

Scaly Spleenwort, *Ceterach officinarum*. Goshen Bridge.

Royal Fern, *Osmunda regalis*. Cors Fochno, Cors Teifi.

Adder's Tongue, *Ophioglossum vulgatum*. Grass field near Monk's Cave.

Though the Beech Fern is common, the Oak Fern has, curiously enough, not been met with at present; and the Moonwort (*Botrychium lunaria*), formerly found on the hillside at Clarach, has been looked for in vain.

A good deal of attention has been paid to **Mosses** and **Hepatics** by two or three members of the Society during the winter. This is perhaps due to the great abundance and variety of the members of this group in our district, as in Wales generally. With the kind assistance of Mr. J. E. Bagnall, F.L.S., of Birmingham, about a hundred species of Mosses and twenty of Hepatics have been identified, and the localities in which they occur recorded. In addition, Cader Idris has yielded a dozen Mosses, mostly sub-alpine species, which we do not find elsewhere. The following are sufficiently scarce or local to be worth noting, those marked with an asterisk being rare.

MOSSES.

Weissia mucronata	Zygodon viridissimus
Weissia cirrhata	Philonotis calcarea
* Cynodontium polycarpum	* Webera polymorpha
Dichodontium pellucidum	Webera elongata
Dicranella rufescens	Fissidens viridulus
Pottia crinita	* Fissidens decipiens
Barbula ambigua	Amblystegium irriguum
Barbula atroviress	* Hypnum dilatatum
Grimmia orbicularis	Andreæa falcata
* Rhacomitrium heterostichum, var. c. gracilescens (= Grimmia obtusa, <i>Braithwaite</i> .)	

HEPATICS.

Scapania purpurea	* Aneura sinuata
Plagiochila spinulosa	* Anthoceros lævis.

With the good start which has been made, there is reason to hope that the moss flora of the district will soon be worked out with some degree of completeness.

Algæ, especially the marine ones, afford a promising, but hitherto almost untouched, field. *Lemanea* occurs in the Ystwyth, and two or more species of *Batrachospermum* have been found.

In conclusion, we may ask our members who are returning after the Long Vacation to bear in mind that the success of the Society will be promoted, if they will bring under our notice next session any facts or objects of scientific interest which they come across during their wanderings. We believe that the Society may fill a useful place if those interested will work together with this end in view.



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